

REMARKS

In the Office action dated April 14, 2008, pending claims 1, 5, and 8 are rejected under 35 USC § 102(b) as being anticipated by U.S. Patent No. 5,151,178 to Nickerson et al. (hereafter “Nickerson”). In addition, pending claims 2, 3, 6, and 9 are rejected under 35 USC § 103(a) as being unpatentable over Nickerson. Further, pending claims 4 and 10 stand rejected under 35 USC § 103(a) as being unpatentable over Nickerson in view of U.S. Patent No. 4,635,683 to Neilson (hereafter “Neilson”).

Applicants have amended claims 1, 5, and 7. In addition, Applicants herewith submit new claims 11-20. The amendments and new claims are supported by the application as originally filed and do not introduce any new matter.

Arguments Supporting the Withdrawal of §102(b) Rejection of Claims 1, 5 and 8:

Pending claims 1, 5, and 8 stand rejected under 35 USC §102(b) as being anticipated by Nickerson. In response thereto, Applicants have carefully considered the rejection in the Office Action. Nevertheless, Applicants respectfully traverse this rejection.

Nickerson does not teach each and every element and limitation of present claim 1. Nickerson relates to a solenoid driven valve. A valve block 210 includes an inlet 214 and an orifice 212. A ball 200 and diaphragm 202 serve to control the flow of fluid between the inlet 214 and orifice 212. The ball 200 and diaphragm 202 are biased to a closed position by a solenoid-driven pin 206. When the solenoid 204 is energized, the pin 206 is pressed against the ball 200 whereby the ball 200 and diaphragm 202 seal the orifice 212. However, when the fluid pressure is sufficient, the ball 200 and diaphragm 202 are lifted by the pressurized fluid and fluid is permitted to pass through the orifice (see col. 3, lines 35-45). Importantly, the ball 200 and diaphragm 202 are not attached to one another (see col. 4, lines 40-43).

Nickerson clearly fails to teach every element and limitation as required by present claim 1. Nickerson teaches that the ball and diaphragm are not attached to one another. In contrast, a portion of the guide spring of present claim 1 is securely attached to the first end of the plunger.

Therefore, for at least this reason, the rejection of claim 1, and any dependents therefrom, should be withdrawn and such action is respectfully requested.

Turning now to the rejection of claim 5, Applicants submit that Nickerson fails to teach each and every element of present claim 5. Each embodiment disclosed by Nickerson includes only one diaphragm that is used for sealing purposes. In contrast, present claim 5 depends from present claim 1 whereby the valve assembly includes a first guide spring having a second surface which is sealable against the first surface of the orifice and a seal member situated between the orifice member and the valve body. Therefore, in addition to the forgoing comments regarding present claim 1, Applicants submit that the rejection of present claim 5 should be withdrawn and such action is respectfully requested.

Arguments Supporting the Withdrawal of §103(a) Rejection of Claims 2, 3, 6 and 9:

With respect to the rejection of claims 2, 3, 6 and 9 under 35 USC §103(b) as being unpatentable over Nickerson, Applicants traverse this rejection and reiterate the arguments set forth above regarding Nickerson. In particular, since claims 2, 3, 6 and 9 depend either directly or indirectly from claim 1, Applicants respectfully request that the rejection of these claims be withdrawn.

With specific reference to the rejection of claims 2 and 3, Applicants reiterate that the ball 200 and diaphragm 202 in Nickerson are not attached to one another (see col. 4, lines 40-43). The Office Action suggests that welding the ball 200 to the diaphragm 202 would have been obvious to one having ordinary skill in the art. However, Nickerson clearly teaches away from attaching the ball 200 to the diaphragm 202 as the purpose of the arrangement shown in FIG. 3 is to “eliminate the need for attaching the ball to the diaphragm” (col. 4, lines 40-43).

Moreover, in order for the valve assembly in Nickerson to function, the ball 200 and diaphragm 202 could not be attached to one another. In Nickerson, when the fluid pressure is sufficient and despite the action of the pin 206 against the ball 200, the ball 200 and diaphragm 210 are moved by pressurized fluid such that the pressurized fluid may pass from the inlet 214 to the orifice 212. Given that the ball 200 and diaphragm 210 move when the fluid pressure is sufficient and despite the action of the pin 206 against the ball 200, the ball 200 must move laterally within the

valve chamber 208. Securing the ball 200 to the diaphragm would render the valve assembly in Nickerson wholly inoperable because the ball 200 would be pressed between the pin 206 and the diaphragm 202 and the diaphragm 202 would prevent lateral movement of the ball within the chamber 208. Without such lateral movement, the diaphragm 202 would not be moved by sufficiently pressurized fluid and the orifice 212 would remain sealed. Therefore, for at least this reason, the rejection of claims 2 and 3 should be withdrawn and such action is respectfully requested.

Arguments Supporting the Withdrawal of §103(a) Rejection of Claims 4 and 10:

With respect to the rejection of claims 4 and 10 under 35 USC §103(a) as being unpatentable over Nickerson in view of Neilson, Applicants traverse this rejection and reiterate the arguments set forth above regarding Nickerson. Since claims 4 and 10 either directly or indirectly depend from claim 1, Applicants respectfully request that the rejection of these claims be withdrawn.

Turning specifically to Neilson, the document teaches a variable force solenoid where a valve spool 10 acts to control fluid flow from the inlet 42 to the outlet 44. The valve spool 10 is connected to a shaft actuator 16. The shaft actuator 16 moves in response to the coil 26 being energized. One end of the shaft actuator 16 includes a bevel spring 32 and a bearing 34, and the opposite end of the shaft 16 includes a bearing 36. The bearings 34 and 36 transfer radially directed forces to the solenoid casing and eliminate sliding friction (col. 4, lines 61-64 and col 5, lines 1-2).

The combination of Nickerson and Neilson fails to disclose every element of claims 4 and 10. The Office Action has characterized the bearing 36 of Neilson as a flat guide spring. However, bearings and springs are completely different devices. A spring stores mechanical energy and a bearing permits constrained relative motion between two parts. Thus, the combination of Nickerson and Neilson fails to teach a valve assembly having a first guide spring attached to a first end of the plunger and a second guide spring attached to a second end of the plunger. Therefore, for at least this reason, the rejection of claims 4 and 10 should be withdrawn and such action is respectfully requested.

CONCLUSION

Applicants have made an earnest effort to be fully responsive to the Examiner's objections. Also, while the Office Action indicates that claims 1-10 are rejected, it appears that examination and/or discussion of present claim 7 has been inadvertently omitted. Applicants respectfully request examination of all pending claims, including claim 7. Nevertheless, Applicants submit that the application is now in condition for allowance, and accordingly, respectfully request the allowance thereof.

If, however, the Examiner should for any reason consider this application not to be in condition for allowance, the Examiner is respectfully requested to telephone the undersigned attorney at the number listed below prior to issuing a further Action.

Should an additional fee be required, please charge our Deposit Account No. 19-3140 from which the undersigned is authorized to draw.

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Respectfully submitted,

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